No. XIV.

WARMING MANUFACTORIES.

The LARGE SILVER MEDAL *was this session presented to T.* BEWLEY, *Esq., of Montrath, Ireland, for his mode of* WARMING A COTTON-MILL BY MEANS OF THE HEAT PRODUCED IN BURNING LIME. *The following communication has been received from him on the subject.*

SIR, Montrath, Ireland, March 26, 1824.

AS a candidate for the gold medal, offered by the Society of Arts, "for a method of heating rooms superior to, and cheaper than any hitherto known or in use, for the purpose of manufactures," I beg leave to enclose a drawing, accompanied by the required certificate, of a method which I have invented for heating my cotton mill, and which I have found, by several years' experience, fully to accomplish the important objects required by the Society, of *cheapness* and *superiority*, at least so far as I am acquainted with any other method.

I have to beg of you to lay the enclosed before the Society, and to express my hope that, upon due consideration of the plan, description, and observations annexed thereto, they may consider me entitled to the high honour of receiving their gold medal.

I am, Sir,

&c. &c. &c.

THOS. BEWLEY.

A. Aikin, Esq.
Secretary, &c. &c.

CERTIFICATE.

Mountrath, March 25, 1824.

WE, the undersigned inhabitants of the town of Mountrath and its vicinity, do hereby certify that we have visited the cotton mill of Mr. Thomas Bewley; that the same is heated and ventilated solely by means of the burning of lime; and that it appears to us the heat so produced in the different rooms is fully adequate to this or any similar purpose.

VALENTINE GRIFFITH, *Minister.*
J. SMITH, *Resident Magistrate.*
W. VICARS GRIFFITH.
ROBERT KNAGGS.
E. H. DEMPSY, Clk.
DAVID TINGORAH.
THOMAS BORROWES.
DANIEL EGAN.
ANTHONY DEVERILL.
JOHN BRAY.
MICHAEL KELLY.
ARTHUR MILLER.

Description of the manner of heating and ventilating the cotton mill of Mr. Thomas Bewley of Montrath, by means of the burning of lime.—Plate XII., Fig. 6.

a a a a a Are the several rooms of the building.
b Is a kiln, in which lime-stones are burned.

c Is a canopy, or cover of cast-iron, placed over the kiln, from which proceeds *d d* a cast-iron pipe for carrying off the effluvia and smoke from the kiln.

e The chimney.

f The opening of the pipe *d*, round the outside of which the chimney is well closed in.

g The opening into the kiln for supplying the stones, &c., and which is closed with a strong sheet-iron door.

h h Is a brick wall surrounding the canopy *c*.

i Is a covering of bricks, bearing on iron bars on the wall *h*.

k Is one of several openings at the bottom of the wall *h*, for the admission of air.

l l l l Are apertures in the chimney *e*, for the admission of heated air into the several rooms: these openings have registers for regulating the quantity of hot air to be admitted.

m Is an opening into the chimney *e*, and is closed by an iron door: this door is only opened before setting fire to the kiln, for the purpose of cleaning the pipe *d*, which is done by letting down a rope, with a weight appended, to which is attached some straw or other matter.

n Is another opening into the chimney *e*, and closed by an iron door: this is also only used for cleaning the horizontal pipe *d*, which has here a cap or cover that may be occasionally taken off.

o Is the eye or aperture at the bottom of the kiln, for drawing the lime.

p An area surrounding the building.

q A floor or stage for breaking the stones and supplying the kiln; which is on a level with *r* the yard or ground outside the building.

s s The gable end and roof of the lime-house.

OBSERVATIONS.

THIS method of heating and ventilating is peculiarly applicable to manufactories, prisons, hot-houses, and all places where a steady, equable degree of heat is desired to be maintained. The lime is drawn from the kiln twice in twenty-four hours, (say at morning and evening), when fresh charges of stones and fuel are applied. If a still more steady degree of heat be required, the lime may be drawn three or four times in twenty-four hours, and layers of stones and fuel proportionally thin put on. It is obvious that heat is kept up during night as well as in the day time, which is a matter of great importance in almost every case where heat is necessary, thereby preventing those unpleasant consequences to machinery and materials which are often the result of a change of temperature; and also the loss of time which often occurs in the mornings where fires are to be lighted in the common way. This method is particularly pleasant to the working people, especially to children, as, in cold weather, they are always sure of finding the room comfortably warm on their arrival in the mornings, and are thereby induced to an *early* attendance at their respective employments.

Another very material advantage of this plan consists in its *great safety:* there being no possibility whatever (if the work be properly executed) of accident, or any unpleasant effluvia from the fire,—as it is apparent, from a view of the drawing, that the pipe *d d* carries off all sparks, smoke, smell, &c., nothing being admitted into the rooms but the air which enters at the apertures, one of which is shown at *k*, hence passing over and about the canopy *c*, and along the

outside of the pipe *d d*, it is heated to a high degree, and blows out with great violence into the different rooms at the openings *l l l l*.

Another very important matter connected with this plan of heating is, that the fuel, which is the most proper for use, is of that description which is applicable to no other purpose, and consequently cheaper, namely, culm, cinders, &c. &c.

But the most important quality belonging to this mode of heating rooms, consists in its *cheapness*, or rather in its affording a *profit*, independent of the heat. Lime is an article every where used, and always in demand: it is, therefore, to be presumed, there are very few situations in which lime may not only pay the cost of burning, but leave a profit on the manufacture.

For the general purposes of warming and ventilating manufactories, &c., no more heat is necessary in this way than the superfluous heat which is unavoidably produced by the calcining of the lime-stones. The cotton mill, to which the annexed drawing refers, consists of five rooms; the under one alone it is not necessary to heat; the rooms are about fifty feet long by twenty broad. The heated air, immediately on its admission into the rooms, at the openings *l l l l*, frequently raises the thermometer to one hundred and forty degrees; but the general temperature of the apartments may be about eighty degrees. The kiln is a small one, being only eleven feet deep and seven feet at its greatest breadth, the situation not admitting of a larger; but it would be advisable, in point of economy, to have the kiln deeper. Before the adoption of this plan of heating, a considerable sum was necessarily expended annually in fuel; but since this method has been applied, so far from

the heating of the mill being attended with expense, the sale of the lime has afforded a profit, not to mention the great superiority of this method of heating to that of burning fuel in the common way.

In situations where lime-stones cannot be had, heat may be advantageously supplied in this way, for the purpose of manufactories, by the burning of bricks, tiles, &c.: in this case there ought to be two kilns, communicating each occasionally with the same chimney, so as that one may be in use while the other is in preparation.

Clay may also be in many places burned for the purpose of manure with the greatest advantage.

The application of this plan, of heating and ventilating, to prisons, penitentiaries, &c. might be attended with many beneficial consequences; as, beside contributing to the health and comfort of the inmates, it might be the means of useful aud profitable employment, as all the operations necessary are within the compass of moderate abilities.

THOS. BEWLEY.